

**Louisiana Department of Environmental Quality (LDEQ)  
Office of Environmental Services**

**STATEMENT OF BASIS**

**Cabot Corp  
Canal Plant  
Centerville, St. Mary Parish, Louisiana  
Agency Interest Number: 19901  
Activity Number: PER20070006  
Proposed Permit Number: 2660-00004-V2**

**I. APPLICANT**

**Company:**  
Cabot Corp  
PO Box 598  
Franklin, Louisiana 70538-0598

**Facility:**  
Cabot Corp  
272 Cabot Canal Plant Ln  
Centerville, St. Mary Parish, Louisiana  
Approximate geographic coordinates: 29° 41' 8" North, 91° 28' 20" West

**II. FACILITY AND CURRENT PERMIT STATUS**

The Cabot Corporation's Canal Plant (Cabot Canal Plant) uses a modular process to convert a carbonaceous feedstock material into various grades of carbon black in an essentially continuous process.

The process begins with the introduction of fuel, oxidants, water and additives into a reaction zone where pyrolysis (cracking) is used to produce carbon black. Supporting utilities are used to maintain these reactants at proper temperatures, pressures, and flows. The reaction is controlled by varying the temperature and fluid mechanics of the process. The carbon black and reaction by-products are then introduced to a primary separation process where gaseous by-products are removed from the carbon black. The gaseous by-products are collected and either combusted or subjected to additional processing. The recovered carbon black is sent to a secondary separation process.

The following controlling parameters are adjusted to produce different grades of carbon black affecting both physical and chemical conditions: rates; introduction methods and location of reactants and additives; temperatures; geometry; fuel/feedstock composition; additives; reaction volume; residence time; and equipment components.

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After separation, certain grades are processed further while others are considered to be in their final form and conveyed to storage or packaged for transportation to the customer.

The recovered black is then conditioned and mixed with water and/or additives for densification. It is then subjected to a product processing and degasification unit where more water and additives may be introduced to achieve the final desired form of carbon black. Some intermittent process venting may occur during normal startup and shutdown and during emergency/upset conditions in order to avoid or alleviate potentially unsafe operating conditions.

The process generates off-gas containing particulates, sulfur dioxide, nitrogen oxides, carbon monoxide, hydrogen sulfide, acetylene and other compounds. Entrained carbon particles are collected from the process stream in baghouses. Carbon black is further processed by either wet or dry processes, packed and stored prior to shipment.

Tail gas from the process is combusted to provide heat for process heaters and dryers. An incinerator (determined as Maximum Achievable Control Technology (MACT)) controls Toxic Air Pollutants (TAPs) in the tail gas such as: hydrogen sulfide (H<sub>2</sub>S); carbonyl sulfide (COS); carbon disulfide (CS<sub>2</sub>); and hydrogen cyanide (HCN).

Rubber-grade carbon black and industrial grade carbon black are produced in units CO-3A, CO-3B, CO-5, CO-6, CS-1, and CS-2. Grades of carbon black production are not restricted to particular units. The finished product is conveyed to storage or packaged for transportation to the customer.

### **III. PROPOSED PROJECT/PERMIT INFORMATION**

#### **Application**

A permit application and Emission Inventory Questionnaire were submitted by Cabot Corporation on October 29, 2007 requesting a Part 70 operating permit modification. A revised permit application was submitted on December 16, 2008, which replaced the previously submitted permit application in its entirety. Additional information dated January 17, 2008, and January 21, 2009, was also received.

#### **Project**

With this modification, Cabot proposes to:

- Remove two silo bin vent filters from the Insignificant Activities list, where they were known by the Source ID No. 352 and 353, and add them as permitted sources (EQT 115 and EQT 116).
- Remove the requirement to install and operate a NO<sub>x</sub> Continuous Emissions Monitoring System (CEMS) for the Combustion Stack (EQT 96) and instead monitor NO<sub>x</sub> emissions using a Predictive Emissions Monitoring System (PEMS).

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**Proposed Permit**

Permit 2660-00004-V2 will be the Part 70 operating permit modification of Part 70 operating permit 2660-00004-V1 for the Canal Plant.

**Permitted Air Emissions**

Estimated emissions in tons per year are as follows:

Pollutant	Before	After	Change
PM <sub>10</sub>	360.84	361.02	+ 0.18
SO <sub>2</sub>	27101.00	27101.00	-
NO <sub>x</sub>	1823.00	1823.00	-
CO	6774.06	6774.06	-
VOC	447.05	447.05	-

**IV REGULATORY ANALYSIS**

The applicability of the appropriate regulations is straightforward and provided in the Specific Requirements section of the proposed permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are also provided in the Specific Requirements section of the proposed permit.

**Applicability and Exemptions of Selected Subject Items**

ID No:	Requirement	Notes
EQT 8,11-13,22,23,24,27,44,48,62-65,96	Emission Standards for Particulate Matter [LAC 33:III.1311.B]	DOES NOT APPLY. The burning of fuel for indirect heating where products of combustion do not come into contact with process materials is not subject to this section.
EQT 24,27	Emission Standards for Particulate Matter [LAC 33:III.1311.C]	DOES NOT APPLY. The burning of fuel for indirect heating where products of combustion do not come into contact with process materials is not subject to this section.

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ID No:	Requirement	Notes
EQT 8,11-13,22,23,44,48,62-65	Emission Standards for Particulate Matter [LAC 33:III.1313.C]	DOES NOT APPLY. Reactor (source controlled by filters and scrubbers) does not meet the definition of fuel burning equipment.
EQT 8,11-13,14-18, 27, 29-31,22,23, 24,42-48,62-65,84,85, 94 FUG 01	Emission Limitations for Sulfur Dioxide [LAC 33:III.1503.C]	EXEMPT. Units emit less than 5 tons of SO <sub>2</sub> per year. [LAC 33:III.1502.A.3]
EQT 58-60	Control of Emission of Organic Compounds – Storage of VOCs [LAC 33:III.2103.A]	DOES NOT APPLY. The maximum true vapor pressure of stored liquid is <1.5 psia.
EQT 50-57	Control of Emission of Organic Compounds – Storage of VOCs [LAC 33:III.2103.B]	DOES NOT APPLY. The maximum true vapor pressure of stored liquid is <1.5 psia.
Entire Facility	Chemical Accident Prevention and Minimization of Consequences. [LAC 33:III. Chapter 59]	DOES NOT APPLY. There are no chemicals above the threshold quantity.
EQT 27	Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units [40 CFR 60, Subpart Dc]	DOES NOT APPLY. The Barge Dock Boiler was constructed prior to June 9, 1989.
EQT 27, 50-60, 88,89	New Source Performance Standards (NSPS) General Provisions [40 CFR 60.1 through 60.20]	DOES NOT APPLY. These sources are not affected NSPS stationary sources subject to the provisions of this subpart.
EQT 50-60	NSPS Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984. [40 CFR 60.110b(b)]	DOES NOT APPLY. No construction /reconstruction/modification since July 23, 1984. Tanks contain liquids with true vapor pressures <1.5 psia.

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ID No:	Requirement	Notes
EQT 88,89	NSPS Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984. [40 CFR 60.116b(b)]	DOES NOT APPLY. Volume of vessels are <19,800 gallons (<75 m <sup>3</sup> ).
Entire Facility	Chemical Accident Prevention Provisions [40 CFR 68]	DOES NOT APPLY. There are no chemicals above the threshold quantity.

**Prevention of Significant Deterioration/Nonattainment Review**

The project did not increase emissions above significance thresholds. Therefore, PSD review was not required.

**MACT Requirements**

Canal Plant is a major source of toxic air pollutants (TAPs) pursuant to LAC 33:III.Chapter 51. MACT is determined to be compliance with 40 CFR 63 Subpart SS - National Emission Standards for Closed Vent Systems, Control Devices, Recovery Devices and Routing to a Fuel Gas System or a Process and 40 CFR 63 Subpart YY - National Emission Standards for Hazardous Air Pollutants for Source Categories: Generic Maximum Achievable Control Technology Standards.

**Air Quality Analysis**

Emissions associated with the proposed modification were reviewed by the Air Quality Assessment Division to ensure compliance with the NAAQS and AAS. LDEQ did not require the applicant to model emissions.

**General Condition XVII Activities**

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to the Section VIII – General Condition XVII Activities of the proposed permit.

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**Insignificant Activities**

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to the Section IX – Insignificant Activities of the proposed permit.

**V. PERMIT SHIELD**

There is no permit shield.

**VI. PERIODIC MONITORING**

**NOx Predictive Emissions Monitoring System (PEMS) – Combustion Stack (EQT 96)**

The currently effective Title V Permit, Permit No. 2660-00004-V1, requires Canal Plant to install and operate a NOx Continuous Emissions Monitoring System (CEMS) on the Combustion Stack (EQT 96). In the proposed permit, Canal Plant proposes to replace this NOx CEMS with a NOx Predictive Emissions Monitoring System (PEMS).

The proposed NOx PEMS will require Canal Plant to monitor the following parameters:

1. Feedstock flow to each reactor
2. Feedstock Nitrogen content
3. Natural gas consumption rate

Feedstock flow and natural gas consumption rate will be monitored on a continuous basis for each reactor that is manufacturing product. Feedstock nitrogen content will be monitored one per shipment of feedstock. If multiple batches of feedstock are used simultaneously, the feedstock nitrogen content will be determined on a proportional basis. These parameters will be recorded with the same frequency with which they were monitored.

Using the above parameters, Canal Plant will determine the estimated NOx emission rate. Once per year, Canal Plant will conduct a performance test on the Combustion Stack (EQT 96) in order to determine the continuing validity of the NOx PEMS.

**SO<sub>2</sub> Mass Balance – Facility-Wide**

Canal Plant is currently permitted to monitor facility-wide sulfur dioxide emissions using a sulfur mass balance. In this mass balance, the following parameters are recorded each week:

- a. the sulfur content of the feedstock oil to each unit;
- b. the sulfur content of the carbon black product from each unit;
- c. the amount of feedstock oil processed in each unit;
- d. the amount of carbon black produced in each unit;
- e. the amount of sulfur entering each unit (feedstock oil sulfur content \* amount processed);

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- f. the amount of sulfur entrained in the carbon black product from each unit (carbon black product sulfur content \* amount produced); and
- g. the amount of SO<sub>2</sub> emitted from the combustion stack (twice the difference between the amount of sulfur entering all units and the amount of sulfur entrained in the carbon black product from all units)

Using the above parameters, Canal Plant will determine the estimated SO<sub>2</sub> emission rate for the entire facility.

## **VII. GLOSSARY**

Carbon Monoxide (CO) – A colorless, odorless gas, which is an oxide of carbon.

Maximum Achievable Control Technology (MACT) – The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

Hydrogen Sulfide (H<sub>2</sub>S) – A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the reaction of acids on metallic sulfides, and is an important chemical reagent.

New Source Review (NSR) – A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C ("Prevention of Significant Deterioration of Air Quality") and D ("Nonattainment New Source Review").

Nitrogen Oxides (NO<sub>x</sub>) – Compounds whose molecules consist of nitrogen and oxygen.

Organic Compound – Any compound of carbon and another element. Examples: Methane (CH<sub>4</sub>), Ethane (C<sub>2</sub>H<sub>6</sub>), Carbon Disulfide (CS<sub>2</sub>)

Part 70 Operating Permit – Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥ 10 tons per year of any toxic air pollutant; ≥ 25 tons of total toxic air pollutants; and ≥ 100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

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PM<sub>10</sub> – Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) – The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Sulfur Dioxide (SO<sub>2</sub>) – An oxide of sulfur.

Sulfuric Acid (H<sub>2</sub>SO<sub>4</sub>) – A highly corrosive, dense oily liquid. It is a regulated toxic air pollutant under LAC 33:III.Chapter 51.

Title V Permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) – Any organic compound, which participates in atmospheric photochemical reactions; that is, any organic compound other than those, which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.